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AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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Veröffentlicht:

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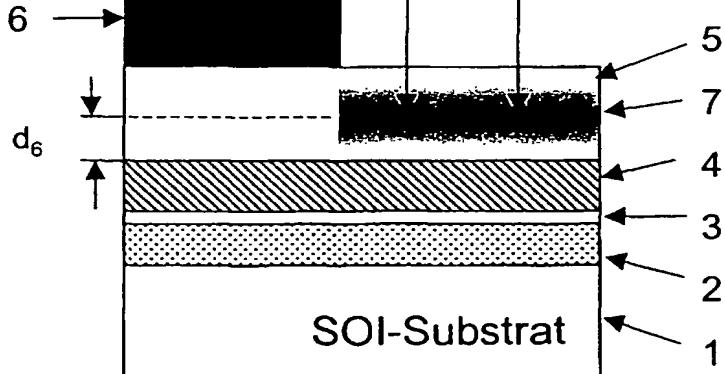
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[Fortsetzung auf der nächsten Seite]

(54) Title: **METHOD FOR PRODUCING A TENSIONED LAYER ON A SUBSTRATE, AND A LAYER STRUCTURE**

(54) Bezeichnung: **VERFAHREN ZUR HERSTELLUNG EINER VERSPANNTEN SCHICHT AUF EINEM SUBSTRAT UND SCHICHTSTRUKTUR**

**H⁺ oder He⁺
Ionenimplantation**



(57) **Abstract:** The invention relates to a method for producing a tensioned layer on a substrate involving the following steps: producing a defect area in a layer adjacent to the layer to be tensioned, and; relaxing at least one layer adjacent to the layer to be tensioned. Additional layers can be epitaxially deposited. Layer structures formed in this manner are advantageously suited for components of all types.

(57) **Zusammenfassung:** Die Erfindung betrifft ein Verfahren zur Herstellung einer verspannten Schicht auf einem Substrat mit den Schritten: Erzeugung eines Defektbereichs in einem zu der zu verspannenden Schicht benachbarten Schicht; Relaxation mindestens einer zu der zu verspannenden Schicht benachbarten Schicht. Es können epitaktisch weitere Schichten angeordnet werden. Derartig gebildete Schichtstrukturen sind vorteilhaft geeignet für verschiedenartigste Bauelemente.

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INTERNATIONAL SEARCH REPORTInternational Application No
PCT/DE2004/000736A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01L21/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	WO 2004/082001 A (MANTL SIEGFRIED ; KERNFORSCHUNGSANLAGE JUELICH (DE)) 23 September 2004 (2004-09-23) the whole document	1-8, 10, 11, 13, 15, 16, 18-30, 41, 42, 47-49, 51, 54, 55, 60-63, 74, 76, 80-86, 88-91, 93-96 -/-

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 03/092058 A (HOLLAENDER BERNHARD ; MANTL SIEGFRIED (DE); ZHAO QUING-TAI (DE); KERNF) 6 November 2003 (2003-11-06) the whole document	1-8, 13, 18-28, 31, 46, 48, 49, 62, 63, 66-70, 74, 76, 80-84, 88-91, 93, 95, 96
P, X	WO 03/098664 A (UNIV CALIFORNIA) 27 November 2003 (2003-11-27) paragraphs '0051! - '0063!	80, 81, 83, 90, 91
X	US 2002/185686 A1 (MOONEY PATRICIA M ET AL) 12 December 2002 (2002-12-12) the whole document	1-9, 15, 16, 18-28, 31, 32, 34-36, 40-68, 70, 72, 74-76, 80-96
X	WO 02/071495 A (AMBERWAVE SYSTEMS CORP) 12 September 2002 (2002-09-12) page 8, lines 4-18; figure 7B	1-5, 7-9, 13, 14, 17, 18, 24-26, 31, 32, 35, 40-46, 49, 54-59, 62, 63, 68, 70, 72, 74, 75, 80-96
X	US 5 442 205 A (BRASEN DANIEL ET AL) 15 August 1995 (1995-08-15) column 9, line 5 - column 10, line 7; figure 5	1-14, 17-26, 31, 32, 35, 36, 40-46, 48-51, 54-63, 67, 68, 70, 72, 74, 75, 80-96

3.91
INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/DE2004/000736

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 2004082001	A	23-09-2004	DE	10310740 A1		30-09-2004
			WO	2004082001 A1		23-09-2004
WO 03092058	A	06-11-2003	DE	10218381 A1		26-02-2004
			WO	03092058 A2		06-11-2003
WO 03098664	A	27-11-2003	WO	03098664 A2		27-11-2003
			US	2003219937 A1		27-11-2003
US 2002185686	A1	12-12-2002	US	2003218189 A1		27-11-2003
			US	2003201468 A1		30-10-2003
			TW	546713 B		11-08-2003
WO 02071495	A	12-09-2002	US	2002125497 A1		12-09-2002
			US	6677192 B1		13-01-2004
			EP	1364411 A1		26-11-2003
			WO	02071493 A2		12-09-2002
			WO	02071495 A1		12-09-2002
			WO	02071491 A1		12-09-2002
			WO	02071488 A1		12-09-2002
			US	2004161947 A1		19-08-2004
			US	6703688 B1		09-03-2004
			US	2003077867 A1		24-04-2003
			US	2003089901 A1		15-05-2003
			US	2002123183 A1		05-09-2002
			US	2002123167 A1		05-09-2002
			US	6593641 B1		15-07-2003
US 5442205	A	15-08-1995	US	5221413 A		22-06-1993
			EP	0514018 A2		19-11-1992
			JP	2792785 B2		03-09-1998
			JP	6252046 A		09-09-1994

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